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Default Policies and Parents' Consent for School-Located HPV Vaccination

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Abstract

While defaults may encourage some health behaviors, how defaults influence controversial behaviors is not well understood. We examined the effect of two default policies on parents' consent to have their adolescent sons hypothetically receive HPV vaccine at school. A national sample of 404 parents of adolescent sons participated in an online 3×2 between-subjects factorial experiment. Factors varied the default consent policy (opt-in, opt-out, or neutral) and the number of vaccines sons would receive (HPV vaccine alone or along with two other recommended adolescent vaccines). Among parents wanting to get their sons HPV vaccine in the next year, consent was higher in the opt-in condition (compared to the opt-out condition) or if other recommended adolescent vaccines would be included. Default policies had no effect among parents undecided about HPV vaccination. Parents' consent for school-located HPV vaccination may be higher when presented as an opt-in decision and other vaccines are included.

Keywords

HPV; vaccine; males; default; policy

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Conflict of Interest

A research grant to Authors #1 and #4 from Merck Sharp & Dohme Corp. funded the study. Merck Sharp & Dohme Corp. played no role in the study design, planning, implementation, analysis, or reporting of the findings. Author #4 has also received grants and/or honoraria from GlaxoSmithKline and Merck Sharp & Dohme Corp. Author #1 has not received honoraria or consulting fees from these companies.

Introduction

The director of the Centers for Disease Control and Prevention recently identified interventions that make healthy options the default choice as one of the most impactful public health actions (Frieden, 2010). Indeed, default policies, including those allowing individuals to opt-in or opt-out of health services, have had large effects on some health behaviors: opt-out default policies have greatly improved organ donation and influenza vaccination among adults (Chapman et al., 2010; Johnson and Goldstein, 2003). The effect of these policies, however, is not well understood for behaviors involved in controversy, such as human papillomavirus (HPV) vaccination.

Starting in 2006, the Advisory Committee on Immunization Practices (ACIP) recommended all 11–12 year-old females in the U.S. receive HPV vaccine, with catch-up vaccination for females through age 26 (Centers for Disease Control and Prevention, 2010b; Markowitz et al., 2007). The ACIP permissively recommended HPV vaccine for males ages 9–26 years in 2009 (Centers for Disease Control and Prevention, 2010c) and later recommended routine vaccination for males ages 11–21 (Centers for Disease Control and Prevention, 2011a). HPV vaccine can be administered at the same visit as other appropriate vaccines, as this likely increases the number of adolescents receiving vaccines on schedule (Markowitz et al., 2007). Despite recommendations, only 49% of female adolescents ages 13–17 years have received any doses of HPV vaccine and only 32% have completed the 3-dose series (Centers for Disease Control and Prevention, 2011b). Vaccine uptake among adolescent males is much lower with less than 2% having received any doses (Centers for Disease Control and Prevention, 2011b).

Countries that have implemented voluntary school-located vaccination programs have considerably higher rates of HPV vaccine uptake, with at least 70% of adolescent females in participating schools having received 1 or more doses (Brabin et al., 2008; Brotherton et al., 2008; Reeve et al., 2008). Despite the U.S. having a more complex healthcare system than these other countries and relatively few schools in the U.S. currently providing vaccines for their students (Brener et al., 2007), voluntary school-located provision of HPV vaccine represents a potentially effective strategy for increasing vaccine uptake among adolescents. Similar voluntary school-located programs have increased varicella and influenza vaccine uptake in the U.S. (Hall et al., 2000; Hull et al., 2008; Poehling et al., 2009).

Parents are critical to the success of school-located vaccination programs because they must consent to their children receiving vaccines at school in most instances (English et al., 2008). Since default policies may influence parents' consent decisions, we examined the effects of such policies on parents' consent to their adolescent sons hypothetically receiving HPV vaccine at school. Based on past research concerning opt-out policies (Chapman et al., 2010; Johnson and Goldstein, 2003) and parental concerns about concomitant administration of vaccines (Madlon-Kay and Harper, 1994; Woodin et al., 1995), we predicted consent for HPV vaccination would be higher under an opt-out consent policy and when consent was for only HPV vaccine. We also predicted that defaults would be especially important for parents who were undecided about whether to get their sons HPV vaccine in the next year, as their opinions may be more malleable than parents who already favor the vaccine.

Methods

Participants and Recruitment

The HPV Immunization in Sons (HIS) Study examined parents' attitudes and beliefs about HPV vaccination for their sons. We surveyed parents with adolescent sons aged 11–17 years old who were members of an existing national panel of U.S. households maintained by an online survey company (Dennis, 2010). The national panel consists of a probability-based sample of U.S. households, which was composed using a dual frame approach combining list-assisted, random-digit dialing and address-based sampling.

In August and September 2010, we invited parents to participate in our online survey. We obtained parents' consent prior to all surveys. If a parent had more than one son aged 11–17 years, we asked the parent to think about the son with the most recent birthday when completing their survey. Households containing one or more panel members receive a laptop computer and free internet access in exchange for panel members completing multiple online surveys each month. In households with existing computer and internet access, panel members accumulate points for completing surveys that can later be redeemed for small cash payments. The Institutional Review Board at the University of North Carolina approved the study procedures.

Of 1195 parents invited to participate via email, 752 responded. Among parents who responded, 73% (n=547) were eligible and completed the parent survey. Parents who completed surveys were more likely to be male, older, non-Hispanic white, and have household incomes of at least $60,000 than those who did not (all $p<0.05$), but they were similar on all other demographic characteristics (all $p>0.05$). Parents with existing computer and internet access received about 1,000 points ($1.00 equivalent) for completing our survey. We do not report data on parents who indicated their sons had already received one or more doses of HPV vaccine (n=11), did not respond to default policy items (n=13), or did not want to get their sons HPV vaccine in the next year (n=119), as their responses to default policy items would not be meaningful given the low acceptability to them of HPV vaccine for their sons. Thus, the analytic sample included 404 parents.

Procedures

We randomly assigned parents to one of six conditions in a 3×2 between-subjects fully crossed factorial experiment. Parents read a vignette that asked them to "Imagine that you just moved to a new state and your son is starting at a new school. This school has a school health center where a trained professional gives students basic health care." Vignettes then described a default consent policy for HPV vaccination that was: (a) opt-in (vaccination would only occur if parents completed a form saying to); (b) opt-out (vaccination would occur unless parents completed a form saying not to); or (c) neutral (parents completed a form saying whether or not to vaccinate). Vignettes also described vaccine administration, defined as the number of vaccines the son would receive: (a) HPV vaccine only; or (b) HPV vaccine along with two other recommended adolescent vaccines (seasonal influenza and meningococcal vaccines) (Centers for Disease Control and Prevention, 2010a).

Measures

The HIS Study survey is available online at http://www.unc.edu/~ntbrewer/hpv.htm. The main outcome was whether parents consented to their sons hypothetically receiving HPV vaccine at school. Each vignette had two response options, one indicating that parents would provide consent to vaccination and one indicating parents would not provide consent. To provide parents with information about HPV and HPV vaccine, the survey contained several brief informative statements prior to their vignette, including: “HPV is a common sexually transmitted infection that sometimes leads to genital warts or cancer.”; “The HPV vaccine is sometimes called the cervical cancer vaccine, Gardasil, or Cervarix. It was first available only for females but is now also available for guys. By guys, we mean boys and young men 9–26 years old.”; “The HPV vaccine protects guys from getting some kinds of HPV that can cause genital warts and some cancers.”; and “The HPV vaccine requires 3 shots over six months.”

Participants provided information on various demographic variables (Table 1). We defined “urban” as living in a metropolitan statistical area (MSA) and “rural” as living outside of an MSA (Office of Management and Budget, 2000). After the survey provided parents with information about HPV and HPV vaccine, we assessed parents’ intent to vaccinate their sons in the next year. We present data for parents who wanted to get their sons vaccinated in the next year or were undecided if they wanted to vaccinate their sons in the next year.

Statistical Analysis

We used chi-square tests to compare experimental conditions on demographic characteristics. We then examined the effects of default consent policy and vaccine administration on parents’ consent to their sons hypothetically receiving HPV vaccine at school. We created indicator variables for the three-level default consent policy variable prior to analyses. We stratified analyses based on parents’ intent to get their sons HPV vaccine in the next year. We examined the main effects and interaction of the two experimental factors using factorial logistic regression. Data were analyzed with SPSS version 17.0 (SPSS Inc., Chicago IL), using two-tailed statistical tests and a critical alpha of 0.05.

Results

The sample included parents from all four geographic regions of the U.S. Most parents were less than 45 years old (61%), non-Hispanic white (67%), married or living with a partner (79%), and lived in an urban area (82%) (Table 1). About half of parents were female (54%), had at least some college education (55%), and reported a household income of less than $60,000 (52%). Most sons were ages 13–15 (37%) or 16–17 (35%), non-Hispanic white (63%), had some form of health insurance (92%), and visited their regular healthcare provider in the last year (79%). Demographic characteristics did not differ between experimental conditions (all $p>0.05$).

Among parents who wanted to get their sons HPV vaccine in the next year (n=121), default policy influenced consent (Figure 1). Parents in the opt-in condition were more likely to

consent to their sons receiving HPV vaccine at school compared to parents in the opt-out condition (75% vs. 52%; OR=2.72, 95% CI: 1.06–7.00, $p<0.05$). The neutral condition (62% consent rate) did not differ from either the opt-in ($p=0.24$) or opt-out ($p=0.38$) conditions. We found a similar, but attenuated, pattern among parents who were undecided about vaccinating their sons in the next year (n=283). A slightly higher percent of parents in the opt-in condition consented to HPV vaccination compared to the opt-out (41% vs. 34%; $p=0.34$) and neutral (41% vs. 34%; $p=0.27$) conditions, but neither difference was statistically significant.

Vaccine administration also affected parents' consent for vaccination among those who wanted to get their sons HPV vaccine in the next year (Figure 2). Parents in the condition where sons would receive HPV vaccine along with seasonal influenza and meningococcal vaccines consented to vaccination more frequently compared to the HPV vaccine only condition (71% vs. 53%; OR=2.21, 95% CI: 1.03–4.74, $p<0.05$). Among parents who were undecided about HPV vaccination for their sons, the number of vaccines included in the consent form had no effect. Default consent policy and vaccine administration did not interact among parents wanting to vaccinate in the next year ($p=0.76$) or those undecided about vaccination ($p=0.89$).

Discussion

Among a national sample of parents with adolescent sons ages 11–17 years, we found that default policies affected parents' consent decisions, provided they wanted to vaccinate their sons against HPV in the next year. Contrary to our hypothesis, these parents were more likely to consent to HPV vaccination if it was presented as an opt-in situation, as compared to an opt-out or neutral approach. This is in contrast to past research, where opt-in defaults had lower rates of organ donation and influenza vaccination among adults (Chapman et al., 2010; Johnson and Goldstein, 2003). It is worth noting that one of these studies also reported lower consent rates for hypothetical organ donation for the opt-in condition compared to the neutral condition (Johnson and Goldstein, 2003), which is also inconsistent with the results of our study.

Some parents in the opt-out condition may have misinterpreted their vignettes as describing school-mandated HPV vaccination, a controversial issue that has been met with opposition (Haber et al., 2007; Herzog et al., 2008). To avoid such confusion, future voluntary school-located HPV vaccination programs should clearly communicate to parents that vaccination would not be required for school attendance. Related, parents in the opt-out condition may have viewed the consent form as an infringement on their parental autonomy, an important issue pertaining to adolescent immunization (Colgrove et al., 2010; Salmon and Omer, 2006). While we speculate that parental consent to school-located HPV vaccination may therefore be higher using opt-in policies, which parents may perceive as a lesser threat to their autonomy, additional research is needed to confirm this idea.

Parents were also more willing to consent to vaccination if HPV vaccine were to be administered along with other recommended adolescent vaccines. These results differ from our predictions and are somewhat surprising since many parents have expressed concerns

about their children receiving three injections during the same healthcare visit (Madlon-Kay and Harper, 1994; Woodin et al., 1995). Such concerns may have been outweighed by parents recognizing the opportunity for their sons to also get seasonal influenza and meningococcal vaccines, as many adolescents do not receive these recommended vaccines (Centers for Disease Control and Prevention, 2010d; Centers for Disease Control and Prevention, 2011b). Another plausible explanation is that the additional vaccines emphasized the salutary nature of the request rather than the controversial nature of HPV vaccine. Thus, future school-based vaccination programs may benefit by getting consent for and providing HPV vaccine during the same visit as other recommended adolescent vaccines. Concomitant administration of HPV vaccine with other recommended adolescent vaccines is well-tolerated and does not interfere with the immune response elicited by the vaccines (Reisinger et al., 2010; Vesikari et al., 2010; Wheeler et al., 2008).

Default policies had no effect among parents who were undecided about getting their sons HPV vaccine in the next year, which was also contrary to our hypothesis. These parents may need additional information before providing consent, regardless of default policy, to their sons receiving HPV vaccine at school. Although our survey provided all parents with informative statements about HPV and HPV vaccine prior to the experiment, we contacted parents only about a year after the ACIP first issued its recommendation of HPV vaccine for males (Centers for Disease Control and Prevention, 2010c), and awareness that males can get HPV vaccine is low among parents (Reiter et al., 2010). Programs to increase community awareness and knowledge levels about HPV vaccine for males are needed to help parents currently undecided about vaccination make informed decisions. It is also possible that some parents undecided about vaccination have strong, conflicting feelings about HPV vaccination, and default policies may not help these parents resolve such conflicts and consent to vaccination.

Our study examined parents' consent for their sons to hypothetically receive HPV vaccine at school, which may not fully reflect consent decisions parents may make in a clinical or school setting. However, some evidence suggests that default policies affect hypothetical and actual consent choices in a similar fashion. A past study examining the effects of default policies on organ donation included an experiment regarding consent for hypothetical organ donation (Johnson and Goldstein, 2003). Interestingly, the experimental results were qualitatively similar to those observed for actual organ donation consent throughout Europe (*e.g.*, consent rates were lower for opt-in compared to opt-out) (Johnson and Goldstein, 2003). We suspect the gap between hypothetical and actual choices may be small for behaviors that do not require much effort (*e.g.*, providing consent), but widens as behaviors require more effort from individuals (*e.g.*, getting a colonoscopy).

Study strengths include use of a national sample of parents and an experimental design with random assignment. Our study also had several limitations. Most participants were non-Hispanic white and of relatively high socioeconomic status, though our sample was drawn from an online panel similar to the U.S. population on many demographic characteristics (Baker et al., 2003; Dennis, 2009). Parents who completed surveys differed from those who did not on some demographic characteristics, and many parents were undecided about vaccinating their sons in the next year. We also do not report data for parents not wanting to

vaccinate their sons in the next year, because of their low overall acceptability of HPV vaccine for their sons. Lastly, the generalizability of our findings to parents' consent decisions for their adolescent daughters, for whom guidelines also recommend routine vaccination (Centers for Disease Control and Prevention, 2010b; Markowitz et al., 2007), to receive HPV vaccine at school remains to be established.

Conclusions

We believe our results potentially have important public health implications. Obtaining parents' consent to vaccination is critical to the success of school-located vaccination programs since such consent is required in most instances (English et al., 2008). Default policies represent a low-cost, sustainable, and modifiable component of the consent process that may influence parents' consent decisions. Parents' consent to HPV vaccination through school-located vaccination programs may be higher with opt-in policies and when offering HPV vaccine along with other recommended adolescent vaccines. Offering additional vaccines may help emphasize the general benefits of adolescent vaccination rather than the controversial nature of HPV vaccination. These strategies may be particularly effective for parents already wanting to get their sons HPV vaccine. For parents who are undecided about vaccination, programs are needed to increase their awareness and knowledge about HPV vaccination for males. Additional research is needed to better understand factors affecting parents' consent decisions under different default policies and how to use defaults to maximize consent.

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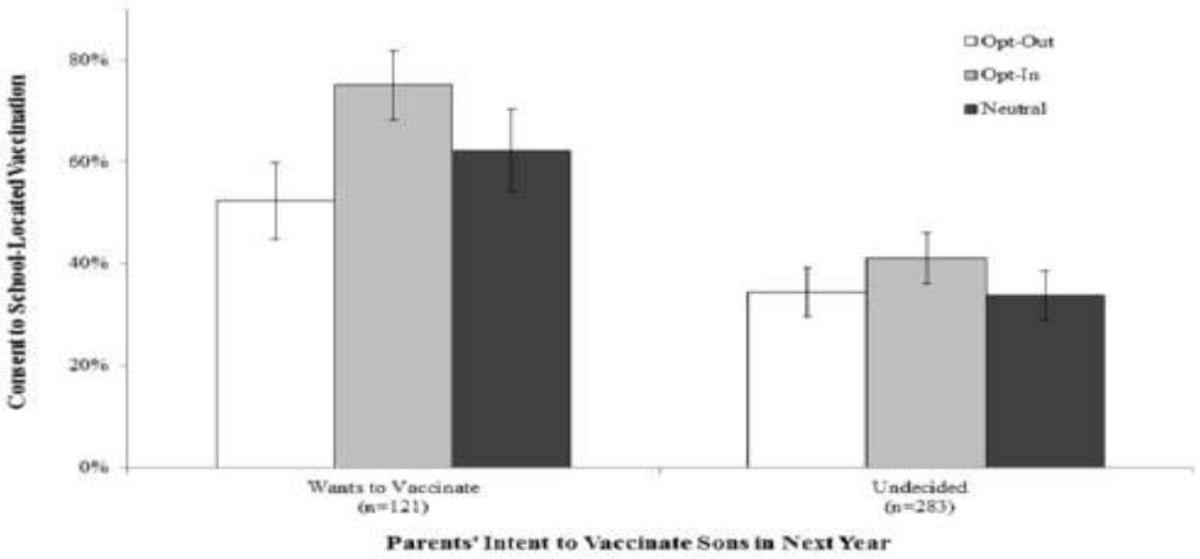

Figure 1.
Default consent policy. Error bars indicate standard errors.

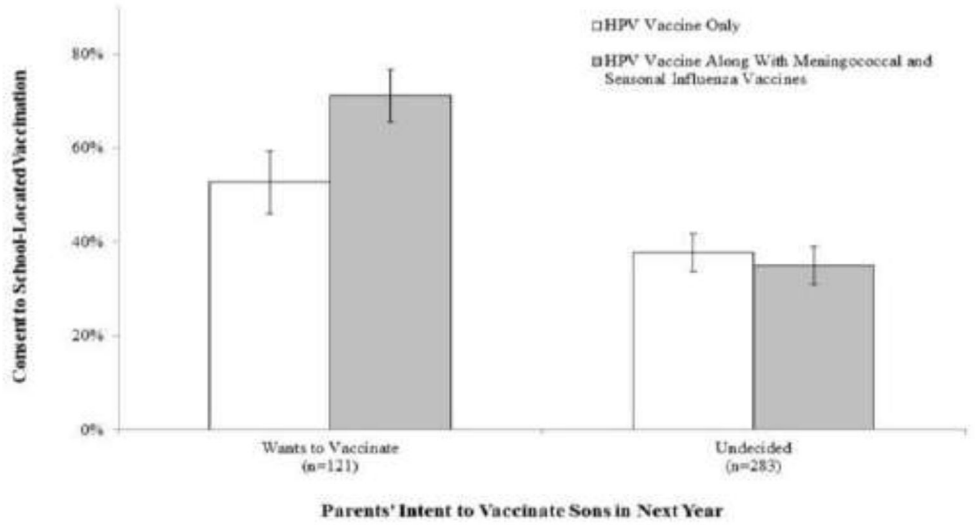

Figure 2.
Number of vaccines included in vaccine administration. Error bars indicate standard errors.

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Table 1

Characteristics of parents and their adolescent sons, n (%).

	Total	Cond. 1[a]	Cond. 2[b]	Cond. 3[c]	Cond. 4[d]	Cond. 5[e]	Cond. 6[f]	*p*
Parent Characteristics								
Age (years)								
<45	247 (61)	36 (59)	42 (62)	50 (69)	44 (60)	39 (57)	36 (60)	0.71
45+	157 (39)	25 (41)	26 (38)	22 (31)	30 (41)	30 (44)	24 (40)	
Gender								
Female	217 (54)	38 (62)	39 (57)	34 (47)	38 (51)	40 (58)	28 (47)	0.39
Male	187 (46)	23 (38)	29 (43)	38 (53)	36 (49)	29 (42)	32 (53)	
Race								
White, Non-Hispanic	272 (67)	49 (80)	47 (69)	45 (63)	49 (66)	45 (65)	37 (62)	0.45
African American, Non-Hispanic	55 (14)	3 (5)	7 (10)	12 (17)	10 (14)	11 (16)	12 (20)	
Other Race, Non-Hispanic	17 (4)	2 (3)	4 (6)	3 (4)	3 (4)	5 (7)	0 (0)	
Hispanic	60 (15)	7 (12)	10 (15)	12 (17)	12 (16)	8 (12)	11 (18)	
Marital Status								
Married/Living With Partner	320 (79)	47 (77)	55 (81)	58 (81)	60 (81)	55 (80)	45 (75)	0.95
Other	84 (21)	14 (23)	13 (19)	14 (19)	14 (19)	14 (20)	15 (25)	
Education								
High School or Less	180 (45)	36 (59)	27 (40)	30 (42)	32 (43)	33 (48)	22 (37)	0.16
Some College or More	224 (55)	25 (41)	41 (60)	42 (58)	42 (57)	36 (52)	38 (63)	
Son Characteristics								
Age (years)								
11–12	113 (28)	17 (28)	18 (27)	21 (29)	26 (35)	19 (28)	12 (20)	0.70
13–15	151 (37)	19 (31)	24 (35)	31 (43)	25 (34)	27 (39)	25 (42)	
16–17	140 (35)	25 (41)	26 (38)	20 (28)	23 (31)	23 (33)	23 (38)	
Race								
White, Non-Hispanic	255 (63)	45 (74)	45 (66)	47 (65)	43 (58)	43 (62)	32 (53)	0.37
African American, Non-Hispanic	49 (12)	4 (7)	7 (10)	11 (15)	8 (11)	8 (12)	11 (18)	
Other Race, Non-Hispanic	40 (10)	6 (10)	7 (10)	3 (4)	10 (14)	10 (15)	4 (7)	
Hispanic	60 (15)	6 (10)	9 (13)	11 (15)	13 (18)	8 (12)	13 (22)	

	Total	Cond. 1[a]	Cond. 2[b]	Cond. 3[c]	Cond. 4[d]	Cond. 5[e]	Cond. 6[f]	*p*
Healthcare Coverage								
No/Don't Know (n=3)	33 (8)	6 (10)	2 (3)	7 (10)	5 (7)	9 (13)	4 (7)	0.36
Yes	371 (92)	55 (90)	66 (97)	65 (90)	69 (93)	60 (87)	56 (93)	
Saw Regular Healthcare Provider In Last Year								
No/Don't Know (n=2)	84 (21)	15 (25)	19 (28)	7 (10)	16 (22)	17 (25)	10 (17)	0.10
Yes	320 (79)	46 (75)	49 (72)	65 (90)	58 (78)	52 (75)	50 (83)	
Household Characteristics								
Income								
Less than $60,000	212 (52)	31 (51)	33 (49)	39 (54)	41 (55)	39 (57)	29 (48)	0.89
$60,000 and Over	192 (48)	30 (49)	35 (52)	33 (46)	33 (45)	30 (44)	31 (52)	
Urbanicity								
Rural	72 (18)	12 (20)	16 (24)	14 (19)	11 (15)	8 (12)	11 (18)	0.54
Urban	332 (82)	49 (80)	52 (77)	58 (81)	63 (85)	61 (88)	49 (82)	
Region of Residence								
Northeast	80 (20)	13 (21)	17 (25)	17 (24)	11 (15)	11 (16)	11 (18)	0.77
Midwest	99 (25)	16 (26)	14 (21)	20 (28)	21 (28)	19 (28)	9 (15)	
South	142 (35)	21 (34)	21 (31)	25 (35)	25 (34)	25 (36)	25 (42)	
West	83 (21)	11 (18)	16 (24)	10 (14)	17 (23)	14 (20)	15 (25)	

Note. Percents may not sum to 100% due to rounding. Reported *p*-values are from chi-square tests comparing experimental conditions.

[a] Experimental condition 1: opt-in consent policy for HPV vaccine only

[b] Experimental condition 2: opt-out consent policy for HPV vaccine only

[c] Experimental condition 3: neutral consent policy for HPV vaccine only

[d] Experimental condition 4: opt-in consent policy for HPV vaccine along with seasonal influenza and meningococcal vaccines

[e] Experimental condition 5: opt-out consent policy for HPV vaccine along with seasonal influenza and meningococcal vaccines

[f] Experimental condition 6: neutral consent policy for HPV vaccine along with seasonal influenza and meningococcal vaccines

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